the steps of:

depositing a semiconductor film comprising amorphous silicon on an insulating surface;

disposing a catalyst metal in contact with said semiconductor film, said catalyst metal being capable of promoting crystallization of said amorphous silicon;

heating said semiconductor film and said catalyst metal to crystallize said semiconductor film; and then

annealing said semiconductor film by utilizing a light from a lamp to improve the crystallinity thereof,

wherein said annealing is carried out in such a manner that a temperature of a monitored single crystal silicon wafer is raised at a rate of 50 to 200°C/s and then cooled at a rate of 20 to 100°C/s.

20. A method according to claim 19 wherein said lamp is a halogen lamp.

21. A method according to claim 19 wherein said light is an infrared light.

22. A method according to claim 19 wherein said light has wavelengths from 0.6 μm to 4 μm.

23. A method according to claim 19 wherein said catalyst metal is selected from the group consisting of nickel, palladium, platinum, copper, silver, gold, indium, tin, phosphorous, arsenic and antimony.

24. A method of manufacturing a semiconductor device comprising the steps of:

depositing a semiconductor film comprising amorphous silicon on an insulating surface;

disposing a catalyst metal in contact with only a selected portion of said semiconductor film, said catalyst metal being capable of promoting crystallization of said amorphous silicon;

heating said semiconductor film and said catalyst metal to crystallize said semiconductor film wherein crystals grow through said semiconductor film in a horizontal direction with respect to said insulating surface in a region adjacent to said selected portion; and then

annealing said semiconductor film by utilizing a light from a lamp to improve the crystallinity thereof,

wherein said annealing is carried out in such a manner that a temperature of a monitored single crystal silicon wafer is raised at a rate of 50 to 200°C/s and then cooled at a rate of 20 to 100°C/s.

25. A method according to claim 24 wherein said lamp is a halogen lamp.

26. A method according to claim 24 wherein said light is an infrared light.

27. A method according to claim 24 wherein said light has wavelengths from 0.6 μm to 4 μm.

28. A method according to claim 24 wherein said catalyst metal is selected from the group consisting of nickel, palladium, platinum, copper, silver, gold, indium, tin, phosphorous, arsenic and antimony.

29. A method of manufacturing a semiconductor device comprising the steps of:

depositing a semiconductor film comprising amorphous silicon on an insulating surface;

disposing a catalyst metal in contact with said semiconductor film, said catalyst metal being capable of promoting crystallization of said amorphous silicon;

heating said semiconductor film and said catalyst metal to crystallize said semiconductor film;

wherein the step of heating is carried out so that the crystallized semiconductor film has a non (111) plane orientation.

30. A method according to claim 29 wherein said catalyst metal is selected from the group consisting of nickel, palladium, platinum, copper, silver, gold, indium, tin, phosphorous, arsenic and antimony.

31. A method according to claim 29 further comprising a step of annealing said semiconductor film by utilizing a light from a lamp to improve the crystallinity thereof after the step of heating.

32. A method according to claim 29 wherein said annealing is carried out in such a manner that a temperature of a monitoring single crystal silicon